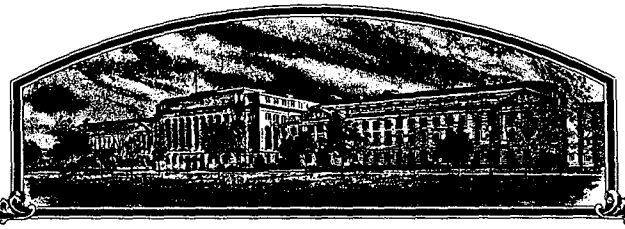
No. 8800217



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'PHN47'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 31st *day of* March *in the year of our Lord one thousand nine hundred and* eighty-nine.

Attest:

Kenneth B. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Clayton Yeutter

Secretary of Agriculture

APPROVAL EXPIRES 2-28-88

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)
Pioneer Hi-Bred International, Inc.

2. TEMPORARY DESIGNATION

3. VARIETY NAME
PHN47

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
Plant Breeding Division
Department of Corn Breeding
PO Box 85
Johnston, IA 50131-0085

5. PHONE *(Include area code)*
515/270-3300

FOR OFFICIAL USE ONLY
PVPO NUMBER
8800217

6. GENUS AND SPECIES NAME
Zea mays

7. FAMILY NAME *(Botanical)*
Gramineae

FILING
DATE Aug. 15, 1988
TIME 12:30 ☐ A.M. ☑ P.M.

8. KIND NAME
Corn

9. DATE OF DETERMINATION
1986

FEES RECEIVED
AMOUNT FOR FILING
$ 1800.00
DATE Aug. 12, 1988
AMOUNT FOR CERTIFICATE
$ 200.00
DATE Dec 27, 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Iowa

12. DATE OF INCORPORATION
May 6, 1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. Richard L. McConnell
Plant Breeding Division
Pioneer Hi-Bred International, Inc.
PO Box 85
Johnston, IA 50131-0085
PHONE *(Include area code)*: 515/270-3363

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
- a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
- d. ☒ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☐ Yes *(If "Yes," answer items 16 and 17 below)* ☒ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ Foundation ☐ Registered ☐ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ Yes *(If "Yes," give date)*
☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES ?
☐ Yes *(If "Yes," give names of countries and dates)*
☒ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT
Pioneer Hi-Bred International, Inc.

DATE

SIGNATURE OF APPLICANT
by: Richard L McConnell

DATE
August 8, 1988

FORM LS-470 (3-86) *Edition of 7-84 obsolete.*

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14A. Exhibit A. Origin and Breeding History

Pedigree: 207/PHB60)X9211X

Pioneer line PHN47, Zea mays L., a yellow dent corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross 207 x PHB60 using the pedigree method of breeding. The progenitors of PHN47 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing and selection were practiced within the above F1 cross for six generations in the development of PHN47 at Tifton, Georgia. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Tifton, Georgia, and at other Pioneer research stations in the southern U.S. Corn Belt. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations made for uniformity.

PHN47 has shown uniformity and stability for all traits as described in Exhibit C (form LPGS-470-28) - "Objective Description of Variety." It has been self-pollinated and ear-rowed a sufficient number of generations with careful attention paid to uniformity of plant type to assure genetic homozygosity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity.

No variant traits have been observed or are expected in PHN47.

14B. Exhibit B. Novelty Statement

PHN47 is most similar to the Pioneer inbred line 207 (PVP Cert. No. 8300144). PHN47 is much later in maturity compared to 207 and it has purple anther color, green glume color, and green silk color whereas 207 has red anther color, red glume color, and red silk color.

FORM APPROVED: OMB NO. 40-R3822

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Corn)

OBJECTIVE DESCRIPTION OF VARIETY

CORN *(ZEA MAYS)*

NAME OF APPLICANT(S)
Pioneer Hi-Bred International, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Plant Breeding Division
Department of Corn Breeding
PO Box 85
Johnston, Iowa 50131-0085

FOR OFFICIAL USE ONLY
PVPO NUMBER 8800217
VARIETY NAME OR TEMPORARY DESIGNATION
PHN47

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. TYPE:

[2] 1 = SWEET 2 = DENT 3 = FLINT 4 = FLOUR 5 = POP 6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

[5] 1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST
5 = SOUTHCENTRAL 6 = SOUTHWEST 7 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

(Under "comments" (pg. 3) state how heat units were calculated)

[8][2]	DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK	[1][7][6][0] HEAT UNITS
[ ][ ]	DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY	[ ][ ][ ][ ] HEAT UNITS
[ ][ ]	DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE	[ ][ ][ ][ ] HEAT UNITS

4. PLANT:

[2][1][2] CM. HEIGHT (To tassel tip)

[0][8][1] CM. EAR HEIGHT (To base of top ear)

[1][2] CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

[1] 1 = NONE 2 = 1–2 3 = 2–3 4 = > 3

Number of Ears Per Stalk:

[2] 1 = SINGLE 2 = SLIGHT TWO-EAR TENDENCY
3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

[1] 1 = NORMAL 2 = "T" 3 = "S" 4 = "C" 5 = OTHER (Specify) _____

5. LEAF (Field Corn Inbred Examples Given):

Color:

[2] 1 = LIGHT GREEN (HY) 2 = MEDIUM GREEN (WF9) 3 = DARK GREEN (B14) 4 = VERY DARK GREEN (K166)

Angle from Stalk (Upper half):

[2] 1 = < 30° 2 = 30–60° 3 = > 60°

Sheath Pubscence:

[1] 1 = LIGHT (W22) 2 = MEDIUM (WF9) 3 = HEAVY (OH26)

Marginal Waves:

[1] 1 = NONE (HY) 2 = FEW (WF9) 3 = MANY (OH7L)

Longitudinal Creases:

[1] 1 = ABSENT (OH51) 2 = FEW (OH56A) 3 = MANY (PA11)

Width:

1 [0][9] mm/CM. WIDEST POINT OF EAR NODE LEAF

Length:

[0][7][4] CM. EAR NODE LEAF

[2][1] NUMBER OF LEAVES PER MATURE PLANT

4

6. TASSEL:

[1][3] NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

[1] 1 = < 30° 2 = 30–40° 3 = > 45°

Penduncle Length:

17 [1][7] CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

[3] 1 = LIGHT (WF9) 2 = MEDIUM 3 = HEAVY(KY21)

[4] **Anther Color:** } 1 = YELLOW 2 = PINK 3 = RED 4 = PURPLE 5 = GREEN

[5] **Glume Color:** } 6 = OTHER (Specify) _____

Pollen Restoration for Cytoplasms (o = Not Tested, 1 = Partial, 2 = Good)

[0] "T" [0] "S" [0] "C" [0] OTHER (Specify Cytoplasm and degrees of restoration) _____

7. EAR (Husked Ear Data Except When Stated Otherwise):

[ ][ ] CM LENGTH [ ][ ] MM. MID-POINT DIAMETER [ ][ ] GM. WEIGHT

Kernel Rows:

[2] 1 = INDISTINCT 2 = DISTINCT [ ][ ] NUMBER

[1] 1 = STRAIGHT 2 = SLIGHTLY CURVED 3 = SPIRAL

Silk Color (Exposed at Silking Stage):

[1] 1 = GREEN 2 = PINK 3 = SALMON 4 = RED

Husk Color:

[1] FRESH } 1 = LIGHT GREEN 2 = DARK GREEN 3 = PINK

[6] DRY } 4 = RED 5 = PURPLE 6 = BUFF

Husk Extention: (Harvest Stage)

[2] 1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear) 3 = LONG (8–10CM Beyond Ear Tip) 4 = VERY LONG (> 10 CM)

Husk Leaf:

[ ] 1 = SHORT (< 8 CM) 2 = MEDIUM (8–15 CM) 3 = LONG (> 15 CM)

Shank:

[ ][ ] CM LONG [ ] NO. OF INTERNODES

Position at Dry Husk Stage:

[ ] 1 = UPRIGHT 2 = HORIZONTAL 3 = PENDENT

Taper:

[2] 1 = SLIGHT 2 = AVERAGE 3 = EXTREME

Drying Time (Unhusked Ear):

[ ] 1 = SLOW 2 = AVERAGE 3 = FAST

8. KERNEL (Dried):

Size (From Ear Mid-Point):

[ ][ ] MM LONG [ ][ ] MM. WIDE [ ][ ] MM. THICK

Shape Grade (% Rounds)

[ ] 1 = < 20 2 = 20–40 3 = 40–60 4 = 60–80 5 = > 80

5

8800217

8. KERNEL (Dried) :

[1] **Pericarp Color:** 1 = COLORLESS 2 = RED-WHITE CROWN 3 = TAN 4 = BRONZE
5 = BROWN 6 = LIGHT RED 7 = CHERRY RED
8 = VARIEGATED (Describe) _____

[1] **Aleurone Color:** 1 = HOMOZYGOUS 2 = SEGREGATING (Describe) _____

[9] 1 = WHITE 2 = PINK 3 = TAN 4 = BROWN 5 = BRONZE 6 = RED
7 = PURPLE 8 = PALE PURPLE 9 = ~~VARIEGATED~~ (Describe) Yellow (Other)

[3] **Endosperm Color:** 1 = WHITE 2 = PALE YELLOW 3 = YELLOW 4 = PINK-ORANGE 5 = WHITE CAP.

Endosperm Type:

[3] 1 = SWEET (su1) 2 = EXTRA SWEET (sh2) 3 = NORMAL STARCH 4 = HIGH AMYLOSE STARCH
5 = WAXY STARCH 6 = HIGH PROTEIN 7 = HIGH LYSINE 8 = OTHER (Specify) _____

[ ][ ] GM. WEIGHT /100 SEEDS (Unsized Sample)

9. COB:

[ ][ ] MM. DIAMETER AT MID-POINT

Strength:

[1] 1 = WEAK 2 = STRONG

Color:

[3] 1 = WHITE 2 = PINK 3 = RED 4 = BROWN
5 = VARIEGATED 6 OTHER (Specify) _____

10. DISEASE RESISTANCE (O = Not Tested, 1 = Susceptible, 2 = Resistant):

[0]	STALK ROT (Diplodia)	[0]	STALK ROT (Fusarium)	[0]	STALK ROT (Gibberella)
[2]	NORTHERN LEAF BLIGHT	[2]	SOUTHERN LEAF BLIGHT	[2]	SMUT (Common)
[0]	SOUTHERN RUST	[1]	CORN SMUT (Head)	[2]	BACTERIAL WILT (Stewart's)
[0]	BACTERIAL LEAF BLIGHT	[1]	MAIZE DWARF MOSAIC	[0]	STUNT
[ ]	OTHER (Specify) (Goss')				

11. INSECT RESISTANCT (O = Not Tested, 1 = Susceptible, 2 = Resistant):

[1]	CORNBORER	[0]	EARWORM	[0]	SAPBEETLE	[0]	APHID
[0]	ROOTWORM (Northern)	[1]	ROOTWORM (Western)				
[0]	ROOTWORM (Southern)	[ ]	OTHER (Specify) _____				

12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE CHARACTERS GIVEN:

CHARACTER	VARIETY	CHARACTER	VARIETY
Maturity	PA91	Kernel Type	207
Plant Type	OH7B	Quality (Edible)	
Ear Type	207	Usage	207

REFERENCES:

U.S. Department Agriculture. Yearbook 1937.

Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous (Authors)

Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180. 1935.

The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.

Stringfield, G.H. Maize Inbred Lines of Ohio. Ohio A.E.S. Bul. 831. 1959.

Butler, D.R. 1954 — A System for the Classification of Corn Inbred Lines — PhD. Thesis, Ohio State University.

COMMENTS: Heat units are accumulated from daily temperatures as follows:
HI = Maximum air temperature in Fahrenheit, but not greater than 86.
LO = Minimum air temperature in Fahrenheit, but not less than 50.
Heat Units = (HI + LO)/2 - 50, but not less than 0.

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14D. Exhibit D. Additional Description of PHN47

PHN47 is a yellow dent inbred line of corn, Zea mays L.

As an inbred per se, PHN47 is similar to the Pioneer proprietary inbred 207. These similarities are expected because half of the parentage of PHN47 is 207. The other parent involved in the development of PHN47 is a late maturity proprietary Pioneer inbred line developed from southern Corn Belt germplasm and public germplasm from Australia. PHN47 is used similarly to PHV78 in hybrid combinations. For comparative purposes, data are attached with comparisons of PHN47 to the proprietary inbred lines PHV78 and 207.

14D. Exhibit D. Inbred observation comparison of PHN47 and 207 grown at the same locations in the same year.

INBRED	YLD	EAR SIZE	SCTR GRN	GDU SHED	GDU SILK	POL SHD	TAS SIZE	EAR PLTS	EAR TEX	EAR MLD	SDLG VIG	EST CNT	PLT HT	EAR HT	TLRS
PHN47	57	84	59	1730	1770	139	136	93	109	102	81	86	111	114	192
207	110	92	106	1340	1390	124	126	106	79	86	118	104	88	91	193
DIFFERENCE	43	8	47	390	380	15	10	13	30	16	37	18	23	23	1

NO. OF REPS 37

LEGEND:

Yld	Yield Score
Ear Size	Ear Size
Sctr Grn	Scatter Grain
GDU Shed	50% pollen shed (actual growing degree units)
GDU Silk	50% silk (actual growing degree units)
Pol Shd	Pollen Shed
Tas Size	Tassel Size
Ear Plt	Ears/Plot
Ear Tex	Ear Texture
Ear Mld	Ear Mold
Sdlg Vig	Seedling Vigor (percent of test mean)
Est Cnt	Early Stand Count (percent of test mean)
Plt Ht	Plant Height (percent of test mean)
Ear Ht	Ear Height (percent of test mean)
Tlrs	Tillers

14D. Exhibit D. Comparison of PHN47 and PHV78 crossed to the same tester lines and the hybrids evaluated at the same locations.

INBRED	PRM	SEL IND	YLD	% YLD	MST	GDU SHED	STK LDG	RT LDG	BAR PLTS	STAY GREEN	TST WT	COB SCO	GRN QUAL	SDLG VIG	EST CNT	PLT HT	EAR HT	DRPD EARS	BRTL STKS
No. Reps	108	116	122	122	122	20	59	48	4	83	118	8	70	38	58	74	74	12	-
PHV78	126	106	157	106	98	103	98	91	101	85	98	86	96	95	104	102	103	100	-
PHN47	130	100	150	101	103	107	101	88	98	119	100	94	100	85	94	104	109	100	-
DIFF.	4	6	7	5	5	4	3	3	3	34	2	8	4	10	10	2	6	0	-

LEGEND:

PRM	Predicted RM
Sel Ind	Selection Index
Yld	Yield (Bu/Acre adjusted to 15.5% moisture)
% Yld	Yield in percent of test mean
Mst	Moisture (percent of test mean)
GDU Shed	50% pollen shed (actual growing degree units)
GDU Silk	50% silk (actual growing degree units)
Stk Ldg	Stalk Lodging (percent of test mean)
Rt Ldg	Root Lodging (percent of test mean)
Bar Plts	Barren Plants (percent of test mean
Stay Green	Stay Green (percent of test mean)
Tst Wt	Test Weight (percent of test mean)
Grn Qual	Grain Quality (percent of test mean)
Cob Sco	Cob Score (percent of test mean)
Sdlg Vig	Seedling Vigor (percent of test mean)
Est Cnt	Early Stand Count (percent of test mean)
Plt Ht	Plant Height (percent of test mean)
Ear Ht	Ear Height (percent of test mean)
Drpd Ears	Dropped Ears (percent of test mean)
Brtl Stks	Brittle Stalks (percent of test mean)

14E. Exhibit E. Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc. Des Moines, Iowa, is the employer of the plant breeders involved in the development and evaluation of PHN47. Pioneer Hi-Bred International, Inc. has the sole rights and ownership of PHN47.